



Data Journalism, Impartiality and Statistical Claims

Stephen Cushion, Justin Lewis & Robert Callaghan

To cite this article: Stephen Cushion, Justin Lewis & Robert Callaghan (2016): Data Journalism, Impartiality and Statistical Claims, Journalism Practice, DOI: [10.1080/17512786.2016.1256789](https://doi.org/10.1080/17512786.2016.1256789)

To link to this article: <http://dx.doi.org/10.1080/17512786.2016.1256789>



© 2016 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group



Published online: 22 Nov 2016.



Submit your article to this journal [↗](#)



Article views: 1061



View related articles [↗](#)



View Crossmark data [↗](#)

DATA JOURNALISM, IMPARTIALITY AND STATISTICAL CLAIMS

Towards more independent scrutiny in news reporting

Stephen Cushion, Justin Lewis, and Robert Callaghan

The use of data is often viewed as a potentially powerful democratic force in journalism, promoting the flow of information sources and enriching debates in the public sphere. We explore a key feature of the relationship between data and journalism, drawing upon the largest ever study of statistical references in news reporting (N = 4285) commissioned by the BBC Trust to examine how statistics inform coverage in a wide range of UK television, radio and online media (N = 6916). Overall, our study provides a cautionary tale about the use of data to enlighten democratic debate. While we found that statistics were often referenced in news coverage, their role in storytelling was often vague, patchy and imprecise. Political and business elites were the main actors referencing statistics and interpreting them, but many of their claims were neither questioned nor interrogated further by journalists, with statistics often traded by opposing sides of an argument without independent analysis. In order to enhance the independent scrutiny of statistics, we argue a radical shift in news-gathering and journalistic interpretation is needed, which allows reporters to draw on a wider range of statistical sources and to adopt more critical judgements based on the weight of statistical evidence.

KEYWORDS content analysis; data journalism; impartiality; public service broadcasting; sources; statistics

Introduction

The use of data is potentially a powerful democratic tool, promoting the flow of information sources that can enrich discussion and deliberation on a wide range of issues (Rogers 2011). The presence or availability of data does not, of course, determine how it will be used. After all, we live in a culture that, when confronted by a volume of quantitative information often lapses into numerophobic confusion. Woodward (2009) suggests that the pervasiveness of statistics in many Western societies can be destabilizing, inducing fear and creating panic. The best known aphorism about statistics (the phrase “lies, damn lies and statistics”, popularized by Mark Twain) suggests a widespread scepticism about the value of data, which can often be sloppily constructed or cynically misinterpreted. In the twenty-first century this has been exacerbated by new online and social media platforms enhancing the speed and communication of data.

Since most people do not read raw data-sets, journalism has a key role to play in the discovery, translation and interpretation of statistics. But in an increasingly fluid and fast-paced news culture, the pressure to report and respond to new data quickly has never

been greater. The constant supply of data produced by think tanks, government agencies, independent researchers, academics and others is a significant and a potentially healthy democratic resource. But the time constraints that characterize modern news production put considerable pressure on journalists, who have to interpret the sometimes highly complex methods and meanings behind statistics, reporting data even-handedly and with clarity. While these are long-standing normative goals for journalists when using statistics (Meyer 1973), it is unclear how well adapted they are when applied within the relentless culture of instant news.

In this article, we explore the extent to which the information environment has been enhanced by the increasing statistical supply of facts and figures, and consider the barriers and opportunities for unleashing the democratic potential of statistical evidence. This obliges us to broaden the notion of data journalism and to consider notions of impartiality and objectivity in the use of statistics in routine coverage.

In order to track the degree to which statistics informed news coverage and the clarity in which they were expressed and interpreted, we draw on a large-scale content analysis of UK television, radio and online news over one month. The study was commissioned by the BBC Trust (2016) as part of a wider impartiality review of the BBC's coverage of statistics. Our analysis here moves beyond the BBC Trust's terms of reference, broadening the discussion in light of wider questions about data journalism, impartiality and news values. Our conclusion considers the impact of our research on some of the BBC Trust's recommendations about rethinking the practice of impartiality.

From “How To” to “How Do”: Data Journalism and Reporting Statistics

Debates about the use of statistics by journalists often centre on the development of guidelines for good practice. Meyer's (1973) *Precision Journalism*—now in its fourth edition—is perhaps the exemplar of this kind of approach. It sets out to explain how journalists can better use data to enhance the accuracy and context of news reporting, drawing on well-established social science methods and technological developments.

In more recent years, the term data journalism has emerged, prompting debates about its precise meaning and scope both between and within scholars and practitioners (Coddington 2015; Rogers 2011). Within the journalism profession, data journalism generally refers to the ways in which journalists can explore and make use of data-sets, which ranges from the use of infographics (a long-standing practice) to the analysis and investigation of raw data sources (Knight 2015). The rise of data journalism, in this context, is viewed as a way to create newsgathering techniques that can democratize the flow of information (Bradshaw 2011; Rogers 2011). Since many data-sets are complex, cumbersome and unexplored, it is often regarded as a form of investigative journalism, uncovering stories that are otherwise outside the public domain.

However, as Fink and Anderson (2015, 468) point out, “Data journalism is ultimately a deeply contested and simultaneously diffuse term, and thus would seem to impose analytical difficulties for those who wish to study it”. They defined the scope of their study by searching for a sub-group of journalists with job titles that included terms like “Digital” or “Data” in US news media. In other words, data journalism was analysed by examining a group of (self-identified) specialists. De Maeyer et al.'s (2015) interviews with a range of journalists in Belgium also uncovered conflicting perspectives about the meaning of data

journalism. They concluded that there was “a sharp tension between each part of the doublet, *data and journalism*” (444, original emphasis).

The focus on data journalism as an investigative technique undoubtedly has great value. We would nonetheless argue that debates about data journalism have focused too heavily on data rather than *journalism*, with the potential for new technologies to revolutionize different platforms of news attracting more attention than the more routine and far more widespread use of statistical information sources that inform day-to-day news reporting. We want to broaden the notion of data journalism to refer to the more widespread use of data by journalists. While this always involves the *possibility* of more sophisticated forms of data investigation, it includes the far more commonplace reporting of secondary data by different news media. The task of dealing with, interpreting and disseminating data is—as our analysis confirms—much more likely to be part of a journalist’s daily routine than an investigative exploration of a new data-set by a specialist. This was acknowledged in the BBC Trust’s review of statistics, which noted that “The BBC has a plan to develop data journalism as a cornerstone of its reporting and analysis in *all* areas of News coverage” (BBC Trust 2016, emphasis added). While this might involve data or statistical specialists, they would be working in partnership with the majority of non-specialist BBC journalists.

Scholarly attention to the media use of statistics is often limited to egregious instances of media mishandling of data, in particular the sensationalist (mis)reporting of surveys, notably in crime coverage (Schlesinger and Tumber 1994), or the misrepresentation of specific scientific studies (Lewis and Speers 2003). Best’s (2001, 2004) widely cited books about the media’s treatment of data, for example, draw on selective examples of news media misunderstanding of data-sets, arguing that journalists need more statistical knowledge to help understand and represent the numbers behind claims made by different interest groups.

This kind of approach highlights the scale of the challenge facing journalists in a world of proliferating data. But the aim of our study is to capture a much broader picture of the use of statistics, and to see what other issues emerge in the more commonplace—and possibly technically correct—reporting of all forms of secondary data.

We examined every vague or substantive statistical reference over the course of one month across broadcast and online news platforms in the United Kingdom. While scholars have long studied the use of sources in news coverage (Manning 2001), less attention has been paid to systematically tracking the statistical claims made by sources across different platforms—especially on broadcast news, which, although it is the most popular news source, is more time consuming to analyse. We know, for example, that institutional actors, in particular political elites, tend to be sourced regularly in news coverage (Cottle 2000; Wahl-Jorgensen et al. 2016). But is this the case when statistics are sourced?

Our study quantifies the extent to which data inform broadcast news coverage, the level of analysis involved, where the statistics come from, and whether statistical claims are challenged or accepted. Since our analysis focuses on UK broadcast media, we also consider the role played by norms of impartiality in news reporting. Impartiality, of course, is a highly contested term and its conceptual meaning is often difficult to operationalize and apply in news programming (Barkho 2014). At its most basic, impartiality refers to ideas of political balance and a general principle of even-handedness, a logic that can lead to relativistic reporting—sometimes labelled “false equivalence”—where competing positions are juxtaposed without interpreting the evidence supporting different perspectives (see e.g. Lewis and Speers [2003] on the reporting of the MMR vaccine).

While impartiality is a normative aim for many broadcast journalists, scholars have long studied how it can be measured empirically in news coverage—exploring, for example, the type of news agenda pursued by different broadcasters, the sources used in coverage or the degree of contextual information about a particular issue or event (Barkho 2014; Cushion, Lewis, and Ramsay 2012; Wahl-Jorgensen et al. 2016). We contribute to this empirical line of inquiry by understanding the everyday use of statistics in news coverage and interpreting their impartial use across different broadcast and online platforms, asking the following questions:

- How common is the use of statistics in news coverage?
- How are statistics used, whether vaguely or substantively, to inform news reporting?
- What types of story include statistical references?
- Which sources of statistical information are most often drawn upon?
- How clear and transparent is information about the source of statistics?
- To what extent are statistical claims accepted or challenged?

Our broader aim is to explore whether the use of statistics enhances the information environment in the United Kingdom’s most widely watched, read and listened to news media (Ofcom 2016).

Statistics About Statistics: The Scope of the Study

Interpreting the degree and nature of statistical references across different media platforms was not a straightforward methodological task. While journalists’ treatment of statistics is often discussed in the context of particular data-sets, our aim was to track systematically every statistical reference, however vague or substantive. After an extensive pilot study, we developed an inclusive unit of analysis about what constituted a statistical reference: in brief, the use of figures, or statements which related to figures (such as “crime is going down”) in news items that could realistically be used to make *statistical comparisons* relevant to the story (across time, borders, etc.) or *inferences about a wider situation*, even if the comparison or inference was not always made explicit.

So, for example: statements such as “There’s definitely been a huge spike in the scale of criminal activity” (*ITV News at Ten*, 12 October 2015) or the “The cost of solar power is tumbling” (*Today*, BBC Radio 4, 22 October 2015), while they do not use specific figures, are based on and refer to comparative data-sets, and were included in the sample (we discuss these examples in more detail below). Conversely, the use of numbers in an essentially descriptive sense—such as: “The new steel contract will create 1000 jobs and cost £300 million”—were not included because they use figures in isolation, without making or referring to statistical comparisons.

We examined all statistical references that met this definition in a wide range of BBC media platforms and commercial television newscasts (ITV, Sky and Channel 4) over the course of one month (12 October to 8 November 2015). The television sample included: *BBC News at Six* (Monday to Friday), *BBC News at Ten* (Monday to Friday, Sunday), *BBC Two’s Newsnight* (Monday to Friday), *BBC News* on Saturday evening and Sunday early evening, and the BBC News Channel (5–6 pm Monday to Friday, 6–7 pm Saturday and Sunday), *Channel 4 News*, *ITV News at Ten* (and late evening weekend bulletins) and one hour of *Sky News* 5–6 pm (weekends 6–7 pm). The television sample also included BBC nations and regional opt-outs in Scotland, Wales, Northern Ireland, London and the

South West (6.30–7 pm). Our BBC radio sample included: Radio 4's *Today* (7.30–8.30 am, Monday to Friday), Radio 4's *Six o'Clock News* (Monday to Friday), Radio 5 Live's *5 Live Breakfast* (7.30–8.30 am), Radio 4's *PM* (Monday to Friday) and Radio 1's *Newsbeat* (12.45 pm, Monday to Friday). For online news we examined BBC items on the front pages of their Home and Politics Web pages at 4 pm (Monday to Friday).

Overall, 6916 news items were generated in the sampling period. The sample was roughly split between different platforms, with United Kingdom-wide television having the largest share, commensurate with its popularity and the range of programmes available. Network television constituted 42.1 per cent of the sample: 26.5 per cent being BBC programmes and 15.6 per cent commercial television programmes. Regional BBC television programmes made up 20.4 per cent of the sample, radio items 22.1 per cent and online news items 15.4 per cent.

Amongst the 6916 items examined, we identified 4285 statistical references (some news items containing multiple references), which were then subjected to closer analysis. Overall, we quantified the proportion of news items including statistics, the story topic they appeared in, the source of information, if any, and the way journalists communicated statistical references, whether vaguely or substantively.

Approximately 10 per cent of the sample was subject to an intercoder reliability test using Krippendorff's alpha. Results show all variables were reliable to the standard required, with a large team of coders consistent on whether news items across different platforms contained at least one statistic in online (0.80), BBC television (0.73), radio (0.71) and commercial television (0.76). A smaller group of researchers then examined these items in closer detail, analysing potentially multiple references to statistics within a news item ($N = 4285$). Again, all variables were reliable, with 0.84 for the source of the statistical reference, 0.81 for who referenced the statistic and 0.73 for the clarity with which it was expressed.

We also carried out a week-long analysis of every *substantive* reference to a statistic, asking whether a statistical claim made by a source was either accepted or challenged. Although journalists may make a judgement about a particular set of statistics before publication, our aim was to examine how often they independently verified or contextualized a statistical claim made by a source as part of their broadcast package or online item.

While our empirical focus is on UK media coverage of statistics, our research remains relevant to wider debates about rethinking data journalism, impartiality and editorial practices for news outlets internationally. Moreover, it contributes to efforts to bridge the gap between journalism scholarship and practice, and how academic research can better inform the news industry (Barkho 2014; Cushion, Lewis, and Ramsay 2012).

To What Extent Do Statistics Inform Everyday News Coverage?

Our study confirms that statistical references play a routine role in news reporting. Across all media, [Table 1](#) shows that 22.0 per cent of all news items contained at least one statistical reference. We might have expected television news—which has the visual capacity to communicate data on screen—to have been more inclined to use statistics than a non-visual medium like radio, but their propensity to use statistics was remarkably similar (indeed, the ratio of statistics per news item was slightly higher on radio than on any type of television news outlet). Perhaps more predictably, the medium most inclined to use statistics was online news, which featured a statistic in nearly one-third (32.0 per cent) of

TABLE 1

The percentage of news items that feature at least one reference to a statistic

Media	Yes	No	Total
BBC TV	19.6	80.4	100 (1530)
BBC radio	22.3	77.7	100 (1835)
BBC online	32.0	68.0	100 (1065)
BBC TV nations and regional opt-outs	18.1	81.9	100 (1409)
Non-BBC TV	20.0	80.0	100 (1077)
Total	22.0 (1521)	78.0 (5395)	100 (6916)

N is given in parentheses.

news items. As we shall see, this is part of a general trend in which online news is used to convey more detailed statistical information. It is important to stress, however, that this is less a function of space, since online news stories were typically no longer (in word count) than radio or television news items. It suggests instead that editors limited the amount of statistical information they supplied for audiences in broadcast news.

Table 2 shows which news topics made up our sample of statistical references (the first column) and, more significantly, the percentage of news items *within a news subject* to use at least one statistic (the second column). Over the one sample month period, the dominant stories overall (regardless of whether they used statistics) were about UK politics, crime, sport and international news. So, for example, 22.2 per cent of our sample (of news items with statistical references) were news items about UK politics.

TABLE 2

Use of statistics by news subject (excluding some subjects)

	% of sample	% of items with a statistic
Business	11.9 (181)	49.7
Celebrity/entertainment news	1.1 (16)	8.0
Consumer news	1.8 (28)	24.6
Crime	2.5 (38)	6.1
Disaster/accident/tragedy	1.7 (26)	6.3
Economy	4.7 (72)	75.0
Education	1.2 (19)	32.8
Energy	1.6 (24)	58.5
Environment	2.2 (34)	37.8
Europe/European Union	3.8 (58)	30.9
Health	7.3 (111)	38.5
Immigration/refugees	4.1 (62)	30.5
International	6.2 (95)	19.7
Policing	3.0 (46)	27.9
Science/technology	1.8 (28)	24.1
Social policy (other)	3.9 (59)	54.1
Sport	3.6 (55)	7.2
Taxation	5.2 (79)	47.9
Terrorism	1.2 (19)	8.7
Transport	1.3 (20)	23.8
UK politics	22.2 (338)	32.5

N is given in parentheses.

As we might expect, three of the story subjects most likely to use statistics were business (49.7 per cent of which made reference to statistics), the economy (75 per cent) and taxation (47.9 per cent)—all topics where there is a significant body of data available and where much of it (such as unemployment or Gross Domestic Product growth figures) is routinely used. Equally, it is not surprising to see a fairly sparse use of statistics in celebrity/entertainment stories. Many of the other findings, however, are less predictable, telling us something about the subject-specific nature of news conventions.

Both social policy and energy stories appear to refer regularly to statistical data—in both cases over half the news items on these topics in our sample contain statistical references. So, for example, in a story about the lack of affordable housing, we were told (against a graphical screen backdrop including statistical information and its sources) that:

In 1991 more than two-thirds of those under the age of 35 owned their own home. Last year it was just over one-third, with the numbers renting rising all the time.
(*BBC News at Six*, 23 October 2015)

This use of statistics is clearly helpful—exploiting the availability of data to help audiences understand the nature and scale of social and economic change. There are, however, a number of topics where useful data are widely available but less often used.

The relatively low proportion of crime stories referencing statistics (where statistics are used even more rarely than in celebrity/entertainment stories) reflects the dominance of an episodic rather than thematic approach to crime reporting (Iyengar 1991). Even at the UK network level, the focus is very much on individual and dramatic crime stories rather than broader (and for most viewers, more meaningful) crime patterns or trends. It is not surprising, in this context, that the notable feature revealed by crime statistics over recent decades—of a steady and continual decline in most forms of serious crime—is not widely understood (Lewis 2008). The coverage of terrorism also makes fairly sparse use of statistics, despite a considerable amount of data that could help put a story into context or illuminate the relative risk or scale of terrorist activity (Schlesinger and Tumber 1994; Lewis 2014). Both crime in general and terrorism in particular are areas where people's risk perceptions tend to be exaggerated, misperceptions which may be fed, in part, by the paucity of statistics in news coverage which might tell a less-alarming story.

These figures are, therefore, indicative of the way in which certain kinds of news narratives become associated with the coverage of certain issues. This is important, because it adds layers of nuance to the literature on news values (Manning 2001). Crime, for example, is a topic where journalists tend to favour dramatic storylines and are less interested in providing statistical context to highlight or illuminate trends (Greer 2010). By contrast, our study shows stories about social policy, business and the economy—while they may involve forms of dramatic storytelling—are more routinely underpinned by attempts to convey a (statistically informed) view of trends and historical patterns. This raises important questions about the relationship between broader news frames and public understanding: specifically, whether those frameworks that are conducive to the use of statistical data are more successful in communicating social and economic realities.

The Clarity of Statistical References and Journalistic Interpretation

In order to capture a sense of the detail and clarity of statistical references in broadcasting and online news, we separated each reference into three categories: a vague or

passing reference to statistical information, a clear reference but with little or limited context, or a clear reference with some context provided.

The first category—*statistical information referred to in passing without supporting evidence*—was often used when journalists (or other sources) referred to a trend that was not the main focus of the story. So, for example, a news item on ITV News contained the assertion that:

There's definitely been a huge spike in the scale of criminal activity. (*ITV News at Ten*, 12 October 2015)

Regardless of its veracity, the statement implicitly alludes to a body of data (in which criminal activity is measured) without clarifying the data used, the figures involved or supplying any contextual information. Similarly, a story about the price of solar power suggests a comparative longitudinal analysis of costs, but without providing any details:

The cost of solar power is tumbling. (*Today*, BBC Radio 4, 22 October 2015)

As these examples illustrate, a lack of statistical detail or context can lead to imprecise claims, raising the question of what constitutes a “huge” spike or how steep a fall in prices is implied by the word “tumbling”. This is especially problematic in areas (such as crime) where the available data do *not* convey the kind of simple truth on offer.

When journalists drew more explicitly upon a body of data, supplying figures but without invoking a broader comparative picture, we coded this as a *clear statistical reference with limited context*. Both the following examples (from a story about the European Union referendum and a story about energy prices) give precise figures more or less in isolation, with no contextual information about the way the data were gathered, its statistical significance or its relation to comparative figures:

The date isn't set but will be before the end of 2017 and although polls only give us an idea, right now it appears we're divided. An average suggests that 43 per cent of voters would choose to stay, 39 per cent to go and 17 per cent don't know. (*BBC News at Six*, 12 October 2015)

It said customers could save up to £70 a year by switching, and for those with large overdrafts it could be as much as £260. (*Today*, BBC Radio 4, 22 October 2015)

Both examples offer a more precise snapshot of the world they are portraying, and although they allude to a body of data, they do not offer any broader historical or comparative perspective.

When a reference used more detailed comparative statistical information, with a more tangible set of figures, greater explanation of data or some explanation of the methodology behind it, we coded this as a *statistical reference with some context*. We did not set the bar especially high for references in this category: so, for example, while the following statement provides only sketchy details, it gives both a precise figure (9 per cent) and a longitudinal comparison:

Police morale is said to be at an all-time low. In a recent major survey just 9 per cent of officers said they felt valued. (*BBC News at Ten*, 2 November 2015)

A more detailed example of references in this category came in the following report about migration, which gave precise figures, named the source of the data and provided some detailed context:

The United Nations Refugee Agency says more than 218,000 people crossed the Mediterranean to Europe last month—almost the same as the total for the whole of last year. Summer is usually the high season and the UN [United Nations] says the fact that so many are making the journey as winter approaches shows how desperate they are. (*Six o’Clock News*, BBC Radio 4, 2 November 2015)

We found very few examples of statistics that were articulated, examined or unpacked in greater detail or depth than these examples during our one-month sample period.

Table 3 shows that 23.5 per cent of statistics informing the news were vague or mentioned only in passing, 41.3 per cent provided a clear statistical reference but with little context, analysis or discussion, with the remaining 35.2 per cent supplying both detail and some context. Only around a third of statistical references, in other words, contain much detail or context.

Taken together, Tables 1 and 3 suggest that online news not only uses statistics more routinely than its broadcast counterparts, but communicates statistics with greater precision and depth than broadcast programming, with 82.1 per cent of references in online articles providing at least some context or explanation. Also we find, once again, that despite television’s ability to use graphics to communicate statistical information, there was little difference between television and radio outlets in the clarity or detail of statistical references.

We might have expected BBC television—associated with a more formal public service style of news reporting (Cushion, Lewis, and Ramsay 2012)—to have been more precise/detailed in its use of data than more commercially driven outlets. However, the proportions lean the other way, suggesting that *there is very little correlation between the use of statistics and more popular news styles* associated with outlets like ITV and Sky News. This is an important point, since it challenges expectations that might associate the use of statistics with more public service news conventions, as well as assumptions that the use of statistics is a barrier to popular news reporting.

We found that *most statistical references*—four out of five—*were made by journalists rather than external sources* (see Table 4). This is most striking in the case of online news (92.0 per cent). But even on radio news programmes, where the use of guest interviews is a staple feature, 70.6 per cent of statistical references in news reporting come from journalists. The dominance of journalists in this category reflects the increasingly prominent role they play in communicating news more generally (Cushion 2015), as well as their

TABLE 3
The clarity of every reference to statistics (%)

	Vague/ passing	Clear but little context	Clear, some context given	Total
BBC TV	27.9	35.7	36.4	100 (802)
BBC radio	27.3	38.0	34.6	100 (1218)
BBC online	17.9	45.3	36.8	100 (1176)
BBC opt-outs	23.0	52.7	24.3	100 (457)
Non-BBC TV	21.7	38.9	39.4	100 (632)
Total	23.5 (1009)	41.3 (1769)	35.2 (1507)	100 (4285)

N is given in parentheses.

TABLE 4

References to statistics made by journalists or external sources (%)

	Journalists	External sources	Total
BBC TV	76.8	23.2	100 (802)
BBC radio	70.6	29.4	100 (1218)
BBC online	92.0	8.0	100 (1176)
BBC opt-outs	89.1	10.9	100 (457)
Non-BBC TV	79.1	20.9	100 (632)
Total	80.9 (3465)	19.1 (820)	100 (4285)

N is given in parentheses.

ability (in theory at least) to convey data effectively and succinctly (in a way that external sources are not necessarily trained to do). We develop this point in our final discussion.

This observation is borne out by Table 5, which indicates that although external sources might make statistical claims, most of the time journalists tend to put themselves in the role of providing some context or framework of understanding.

Advocates of data journalism have suggested that not only is there more data available to enhance public debate, it is now easier to cite more clearly the source of data—especially online—so that journalism can begin to be more open and transparent. This is widely regarded as good journalistic practice (Rogers 2011), and even the most basic guidelines on the use of statistics in news stress the need to give the source of statistical information. Table 6 shows that although a majority of statistical references—56.9 per cent—were attributed to a source, *in more than 4 in 10 cases—43.1 per cent—statistical information was entirely unsourced*. Perhaps surprisingly, radio news has the best record here, even though it is much easier to economically identify sources visually. Since radio and television news were covering much the same stories during our sample period, this suggests there is considerable room for television news to improve the transparency of its sourcing and communication of statistics. While references to sources online are at around the same level as radio, the ease with which references can be cited online suggests that online news has been slow to embrace transparency in the reporting of data.

Table 7 shows that it is very much the usual suspects that are used as sources for the largest share of references, with politicians heading the list (23.8 per cent), followed by government agencies (12.3 per cent)—particularly the Office for National Statistics (ONS)—and

TABLE 5

Clarity of references to statistics made by journalists or external sources (%)

	Vague/passing		Clear/little context		Some context	
	Journalist	External	Journalist	External	Journalist	External
BBC TV	26.3	33.3	35.9	34.9	37.8	31.7
BBC radio	25.9	30.7	39.5	34.4	34.5	34.9
BBC online	15.8	41.5	45.9	38.3	38.3	20.2
BBC opt-outs	21.4	36.0	53.6	46.0	25.1	25.1
Non-BBC TV	18.0	35.6	39.0	38.6	43.0	25.8
Total	21.2 (733)	33.7 (276)	42.5 (1471)	36.3 (298)	36.4 (1261)	30.0 (246)

N is given in parentheses.

TABLE 6

Whether external sources of the statistics were identified (%)

	No external source mentioned	External source acknowledged
BBC TV	46.9	53.1
BBC radio	37.4	62.6
BBC online	39.2	60.8
BBC opt-outs	51.0	49.0
Non-BBC TV	50.8	49.2
Total	43.1 (1846)	56.9 (2439)

N is given in parentheses.

people from the world of business (12.3 per cent). Independent and data-rich sources of statistical information, such as academics (6.5 per cent), independent research groups or think tanks (3.8 per cent combined) provided the source of less than 1 in 10 statistical references.

Our findings appear to dampen hopes that the wide availability of independently produced statistics might promote the use of a more diverse range of information-rich sources (Rogers 2011). Indeed, *statistical claims that routinely feature in the news appear*

TABLE 7

Sources of references to statistics (%)

	BBC TV	BBC radio	BBC online	BBC opt-outs	Non-BBC TV	Total
Academy	5.0	9.3	5.5	3.7	5.1	6.5 (149)
Bank of England	3.0	2.2	3.2	1.1	1.0	2.4 (55)
Business	11.8	13.2	13.4	9.6	9.8	12.3 (284)
Government agency/ department(excluding ONS)	6.0	4.0	6.6	9.6	6.0	5.6 (128)
International government organization	5.5	3.9	5.4	0.0	4.4	4.4 (101)
International politics	4.0	2.0	2.9	1.1	7.4	3.2 (75)
Law and order	3.0	3.1	2.0	15.4	4.7	4.0 (92)
Market research/polling	0.5	2.0	4.5	7.4	4.0	3.2 (74)
Media	2.5	3.1	3.5	0.5	1.7	2.7 (63)
Medical	2.5	4.5	2.2	3.2	7.4	3.7 (86)
NGO	6.5	8.5	4.2	14.4	8.1	7.3 (169)
ONS	9.3	1.4	11.4	2.1	8.4	6.7 (154)
Politics	20.6	23.5	21.0	11.7	17.8	20.6 (475)
Pressure group	4.3	1.1	0.6	1.6	1.7	1.6 (37)
Public	1.0	2.9	0.1	3.2	0.7	1.5 (35)
Quango	3.3	1.6	3.6	2.7	1.7	2.6 (60)
Regulatory body	5.8	7.3	0.3	6.4	3.4	4.4 (101)
Show business	1.5	0.7	0.0	0.5	2.0	0.8 (18)
Sport	0.3	0.5	0.7	3.2	0.3	0.7 (17)
Think tank	2.8	3.2	5.5	1.6	3.7	3.8 (87)
Trade union	0.8	1.1	1.9	1.1	0.3	1.2 (27)
Other	0.0	0.7	0.7	0.0	0.3	0.4 (11)
Total	100 (398)	100 (740)	100 (687)	100 (188)	100 (297)	100 (2310)

N is given in parentheses.

TABLE 8

References to statistics from political sources (%)

	BBC TV	BBC radio	BBC online	BBC opt-outs	Non-BBC TV	Total
Conservative Party	82.7	65.5	75.6	16.7	80.0	72.6 (249)
Labour Party	14.7	20.1	23.2	33.3	7.5	18.4 (63)
Scottish National Party	1.3	10.8	1.2	50.0	5.0	6.4 (22)
UK Independence Party	0.0	0.0	0.0	0.0	5.0	0.6 (2)
Liberal Democrats	1.3	3.6	0.0	0.0	2.5	2.0 (7)
Total	100 (75)	100 (140)	100 (82)	100 (6)	100 (40)	100 (343)

N is given in parentheses.

to reinforce rather than challenge the institutional voices that have traditionally dominated broadcast programming and shaped public debates (Cottle 2000). BBC online news is little different from television and radio news in this regard, relying on political and government sources to an even greater degree than broadcasters.

The relative balance of statistical sources also raises questions about the impartiality of perspectives shaping routine coverage of politics and public affairs. So, for example, sources from the business world were 10 times more likely to be able to make statistical claims than trade unions. While non-governmental organizations (NGOs) or charities might also offer a distinctive contribution to social, economic and political affairs, business voices featured almost twice as often. These findings add weight to the growing body of research suggesting that the rapid growth of business news in broadcasting may have led to a fairly uncritical embrace of a view of the world held by business leaders (who, while not a homogenous group, tend to lean to the right politically; see Lewis and Thomas 2015).

A closer inspection of political sources also reveals how the statistical flow of information in news media is currently dominated by the party in government. Table 8 shows that the Conservative Party—which was elected with a majority in May 2015—accounted for 72.6 per cent of political sources of statistics. The opposition Labour Party, by contrast, made up only 18.4 per cent of political sources.

The statistical clout of the ruling government is demonstrated by isolating all references made to “the government”, the Prime Minister and/or cabinet ministers, or government departments (excluding the more independent ONS), such as the Home Office and Department of Health. Overall, these represent 13.5 per cent of all named sources over the one-month period. A notable difference emerges between the BBC and commercial news providers: while BBC network news programmes are no more likely to use statistics than commercial news channels, they are more likely to use government sources. Commercial newscasts are less reliant on the government (9.1 per cent) than BBC television (15.3 per cent), BBC radio (13.8 per cent) or BBC online (15.9 per cent).

It might be expected that the ruling party receives the largest share of coverage, since government ministers have all the trappings of the civil service and regular access to statistical briefings. But *the dominance of the party in power and reliance on the government over alternative sources—especially on the BBC—is striking*. We do not know whether Labour enjoyed the same level of dominance when they were in power, although research

by Wahl-Jorgensen et al. (2016) does indicate the disparity may have been less. Either way, in this period the party in power in Westminster was given considerable licence to use statistical information in ways that are not clearly countered by other sources.

The reliance on government sources places a greater stress on journalists providing critical scrutiny on the state's use of statistical information. To examine this further, we reviewed one week (2–8 November 2015) of coverage, focusing on our most substantive classification of statistics (those that provided some detail and context). Of 237 references identified in this sample, we found only 10—or 4.2 per cent—that were challenged or contextualized. In other words, *the imbalances in statistical sources are not compensated by journalistic scrutiny*. This suggests that the tendency of UK broadcasters (especially the BBC) to favour the government as a statistical source gives them an advantage over opposition parties, granting them a degree of authority and, arguably, a disproportionate influence over the statistics used in news coverage.

When opposition sources *are* reported making statistical claims, it is often in response to claims made by the government. Throughout the one-month sample period, we observed a number of instances where journalists reported political sources making *competing* statistical claims without any journalistic intervention. In doing so, journalists could be seen to be impartial, avoiding taking a position on an issue or forming a judgement. On many occasions, however, *the lack of independent judgement or analysis was unhelpful*, since it was likely to leave all but the most well-informed members of the audience feeling confused.

This tit-for-tat style of statistical reporting has been identified as a feature of the European Union referendum coverage. While most of the statistical evidence tended to support claims on the “Remain” side of the argument, claims and counter-claims were routinely balanced without any clear sense that one had greater validity (Cushion and Lewis 2016). Given the closeness of the result and its weighty consequences, the lack of prominent independent scrutiny of claims made by the “Leave” campaign (many of which rapidly unravelled after the vote) might be seen to have been a significant part of its success. Our point here is that the need for independent scrutiny of statistical claims is not a question of detail or nuance, it is fundamental to people's ability to make sense of the world.

This is also true for less overtly political issues. When the BBC News Channel reported a set of crime statistics, for instance, the findings of two surveys were conveyed without any explanation about their conflicting conclusions:

Overall the crime survey suggests the number of offences is down to a record low. But separate figures from incidents reported to police show an increase. Violent crime went up by 25 per cent. And there were 569 homicides, a category which includes murder and manslaughter cases. (BBC News Channel, October 2015)

While the figures may appear contradictory, a criminologist might easily explain the differences between them. Changing levels of reported crime can be a consequence of police operations (in targeting certain types of crime, such as domestic violence) social attitudes and trust in police, which may differ from people's experience of crime (measured by the British Crime Survey). But since no independent scrutiny of statistical claims was offered, audiences are left none the wiser. Potential audience confusion created by this kind of statistical reporting was identified by focus group research exploring the BBC's

presentation of statistics in news coverage (BBC Trust 2016). As one participant complained, “They’ve hit you with one set of figures, and then they hit you with another set of figures”.

On those occasions when an independent researcher is reported questioning official figures, it can significantly change the context in which they are presented and potentially understood. So, for example, in autumn 2015 the UK government proposed a major cut to tax credits, claiming that the impact on the working poor would be offset by other measures, such as the increase in the minimum wage. Some broadcasters covered the story by pitching the government’s statistical claims against opposition counter-claims. So, for example, the Radio 4 *Today* programme interviewed Conservative Member of Parliament (MP) Matthew Hancock, who claimed that “by next year 8 out of 10 people will be better off as a result” (*Today*, BBC Radio 4, 26 October 2015), a claim repeated in the next set of headlines. This was countered later in the programme during subsequent discussions with opposition MPs, in which both Tim Farron and Owen Smith offered statistical claims that questioned the government’s position.

As we have suggested, the problem with this kind of tit-for-tat presentation is that it is difficult for audiences to know if these claims are indeed contradictory (as they appeared to be) and, if so, *on what basis (other than political partisanship) they should believe one rather than the other*.

Elsewhere, however, reporters incorporated independent assessments of the impact of the proposed cuts—most of which cast doubt on government claims—into their coverage.

Sky News, for example, used Paul Johnson from the Institute of Fiscal Studies (IFS) to offer an independent perspective:

So low-income people in work with children will be losing £1000 or more in some cases as a result of the cuts in tax credits ... There will be something like 3 million families losing overall. Most people who are on tax credits will be losing as a result of this. (Paul Johnson, Institute of Fiscal Studies, Sky News, 26 October 2015)

A more comprehensive analysis of the independent data available suggested a consensus broadly confirming the IFS figures. This example not only shows that it is possible to use independent data sources to go beyond tit-for-tat reporting, but that such an approach offers viewers and listeners far greater clarity.

Interpreting Statistical Claims: Towards More Clarity and Independent Scrutiny

The use of data is a potentially powerful democratic force in journalistic inquiry and storytelling, promoting the flow of information, and, in theory, enriching debates in the public sphere (Rogers 2011). Our comprehensive review of news coverage shows that data—in the form of statistical references—does indeed inform a considerable share of everyday news coverage, although often with little context or detail. However, the greater potential of visual media—notably television—to use statistical references is not being exploited.

The use of statistics in broadcast news is not, however, consistent or predictable. More commercial-oriented television news programmes are just as likely to refer to statistics as the BBC, suggesting that *the use of statistics is not incompatible with more commercial forms of news storytelling*. But it does appear that journalistic conventions attached to

the reporting of certain issues—such as crime and terrorism—act as a barrier to the use of statistical information. Crime reporting tends to emphasize the dramatic and the unusual, an emphasis which crime statistics may undermine. A dramatic story about a grisly murder or a child abduction, for example, will rarely be accompanied by the observation that this is a rare form of crime that is in decline. We observed a similar pattern in the coverage of terrorism.

More generally, our research suggests that the democratic potential of statistical data—and the ideal encapsulated in investigative data journalism—fits awkwardly with other routine patterns of reporting. Far from data supporting a more diverse information environment, the types of source drawn upon for statistical data tend to reinforce the institutional perspectives typically found in news coverage (Cottle 2000; Wahl-Jorgensen et al. 2016). Most statistical references supply only a limited background or context to a story, with government and business sources drawn upon heavily, often without questioning or interrogating their claims. When scrutiny is applied, it is often through the lens of impartiality rather than an attempt at objectivity. This often leads to a tit-for-tat exchange between political adversaries, which, as the audience research in the BBC Trust's (2016) review of statistics indicated, adds heat but little light to public understanding.

We did, nonetheless, find instances where statistical information was used in ways that could be helpful to understanding a story, as well as examples of journalists using independent data sources and expertise to assess government claims. But these were the exception rather than the rule.

Much of the academic literature has tended to focus on the sloppy—or incorrect—use and interpretation of statistical data. The solution to this tends to involve a greater emphasis on “statistical reasoning” (Dunwood and Griffin 2013, 528) in order to raise editorial standards. While this stress on journalistic rigour is laudable, our research suggests that there is often statistical expertise in well-resourced news organizations like the BBC—as well as in easily accessible independent agencies. The problem is not only that this expertise is not well exploited (sometimes residing in limbo online), but that *more traditional features of news storytelling prevail*. The BBC Trust's (2016, 12) review of statistics recognized the first of these points, arguing that “The BBC should consider how better to identify, use and develop the expertise it has and how to champion and incentivise the excellent use of statistics in programme making”.

But for journalists to exploit the rich resources of the digital information age, our findings signal a need for a broader shift away from common newsgathering. Three key areas—diversifying the range of everyday sourcing in news reporting, rethinking the practice of impartiality and questioning news values that stress drama over context—warrant further reflection.

First, the high dependence on political, business and governmental sources significantly limits the range of statistical data used in news reporting. The application and use of these data was often (although by no means always) tied to institutional perspectives in everyday news reporting, with limited opportunities for journalists or sources to independently challenge, develop, contextualize, broaden or verify elite perspectives.

In an earlier study of news sources, we argued that journalists tend to be less interested in organizations committed to research and knowledge production (notably the academic and research sector) than in more secondary, interpretative sources from the world of politics and media (Lewis, Cushion, and Thomas 2005). In short, they use news values that favour conflict over clarity and opinion over explanation. Our findings suggest that this is

even the case in the reporting of data, with the academic/research sector constituting less than 1 in 10 of statistical sources. This creates a bias against understanding—not because, as Birt and Jay (1975) who first coined the phrase suggested, the presentation of news is insufficiently serious, complex or august, but because reporters favour a narrow group of news makers and commentators who shape the parameters of discussion and debate.

A second, related issue is the dependence of broadcasters on an “impartiality-as-balance” paradigm (Wahl-Jorgensen et al. 2016, 1). We found that competing sources were often featured making statistical claims without any independent intervention. While this might appear to be a reasonable way of dealing with conflicting perspectives, it is unhelpful to audiences, and helps to create a widespread cynicism about statistical expertise (BBC Trust 2016). The notions of impartiality and objectivity may be the watchwords of good independent journalism, but they rest upon very different philosophical assumptions. Impartiality embraces a kind of relativism, while objectivity involves uncovering the most plausible accounts of the world around us. In theory, the journalist aims for impartiality when the weight of evidence allows different or competing explanations, and objectivity when the weight of evidence supports it.

There is no need for second guessing here: part of the function of good journalism is to communicate *what the weight of evidence tells us*. Research on the coverage of various scientific “controversies” (e.g. Lewis and Boyce 2003) has criticized journalists for balancing claims regardless of the weight of evidence. Our research suggests this is part of a more widespread reluctance to embrace the notion of objectivity in statistical reporting and to wallow, instead, in the safer but murkier waters of impartiality. Allowing journalists the editorial freedom to challenge source claims and draw on a wider pool of information-rich sources to verify or question elite positions would, in our view, enhance the independent scrutiny of statistics. It is an argument that the BBC Trust (2016, 11) review broadly supported, with a recommendation for the BBC “to help audiences make sense of the statistical evidence in an impartial way. That involves being willing, more than at present, to weigh, interpret and explain the statistical evidence and, when appropriate, challenge and correct when it is misused”. Further still, the review suggested the “BBC needs to get better and braver in interpreting and explaining rival statistics and guiding the audience” (11).

Unfortunately, while the research was conducted before the United Kingdom’s vote on European Union membership, the report and recommendations were published shortly afterwards. Our research on the broadcast coverage of the referendum campaign (Cushion and Lewis 2016) suggests that the reporting of the campaign was an exemplar of precisely the problems addressed by the review. Rather than seizing the opportunity to address the United Kingdom’s considerable democratic deficit in understanding the European Union and establishing a knowledge base for assessing arguments for and against membership, broadcasters tended to reproduce what was widely regarded as an unhelpful series of claims and counter-claims. We hope, however, that the review’s recommendations will inform more rigorous coverage of the Brexit negotiations.

Our third point is, in some ways, the most difficult and most challenging. Subjects like crime—and indeed terrorism—have long been part of a standard journalistic repertoire. But they involve the use of well-established news values whose motivations run directly counter to the use of statistics in news reporting. If we want to convey the social realities of crime, it is unhelpful to begin—as much crime reporting does—by looking for the unusual and the dramatic. This means asking fundamental questions about the purpose of news. While it may be possible (and indeed important) to use forms of storytelling

that inform as well as entertain, there are instances where the desire to entertain (to tell a good story) may end up so disregarding statistical patterns that they end up misinforming our view of the world.

Conflict and controversy are 10-a-penny: context and clarity are much rarer commodities. For journalism to come of age in the digital era, we would argue, depends upon shifting the balance from the former to the latter. This means focusing less on data and more on the *practices of journalism* that allow the independent use of data to flourish in news reporting. This would also provide a much firmer basis for countering the rise of “post-fact” politics and encourage a more evidence-based approach to contemporary journalism.

DISCLOSURE STATEMENT

No potential conflict of interest was reported by the authors.

FUNDING

This work was supported by the BBC Trust.

REFERENCES

- Barkho, Leon. 2014. *From Theory to Practice: How to Assess and Apply Impartiality in News and Current Affairs*. Chicago: University of Chicago Press.
- BBC Trust. 2016. *BBC Trust Impartiality Review: Making Sense of Statistics*. London: BBC Trust.
- Best, Joel. 2001. *Lies, Damned Lies and Statistics: The Untangling of Numbers From the Media, Politicians, and Activists*. Berkeley: University of California Press.
- Best, Joel. 2004. *More Damned Lies and Statistics: How Numbers Confuse Public Issues*. Berkeley: University of California Press.
- Birt, John, and Peter Jay. 1975. “The Radical Changes Needed to Remedy TV’s Bias against Understanding.” *The Times*, 1 October 14.
- Bradshaw, Paul. 2011. *The Online Journalism Handbook: Skills to Survive and Thrive in the Digital Age*. Harlow: Longman.
- Coddington, Mark. 2015. “Clarifying Journalism’s Quantitative Turn: A Typology for Evaluating Data Journalism, Computational Journalism, and Computer-Assisted Reporting.” *Digital Journalism* 3: 331–348.
- Cottle, Simon. 2000. “Rethinking News Access.” *Journalism Studies* 1: 427–448.
- Cushion, Stephen. 2015. *News and Politics: The Rise of Live and Interpretive Journalism*. London: Routledge.
- Cushion, Stephen, and Justin Lewis. 2016. “Impartiality, Statistical Tit-for Tots and the Construction of Balance: UK Television News Reporting of the 2016 EU Referendum.” Forthcoming.
- Cushion, Stephen, Justin Lewis, and Gordon Ramsay. 2012. “The Impact of Interventionist Regulation in Reshaping News Agendas: A Comparative Analysis of Public and Commercially Funded Television Journalism.” *Journalism: Theory, Practice and Criticism* 13: 831–849.
- De Maeyer, Juliette, Manon Libert, David Domingo, François Heinderyckx, and Florence Le Cam. 2015. “Waiting for Data Journalism.” *Digital Journalism* 3: 432–446.
- Dunwood, Sharon and Robert J. Griffin. 2013. “Statistical Reasoning in Journalism Education.” *Science Education* 35: 528–539.

- Fink, Katherine, and C. W. Anderson. 2015. "Data Journalism in the US: Beyond the "Usual Suspects"." *Journalism Studies* 16: 467–481.
- Greer, Chris. 2010. *Crime and Media: A Reader*. London: Routledge.
- Iyengar, Shanto. 1991. *Is Anyone Responsible*. Chicago: University of Chicago Press.
- Knight, Megan. 2015. "Data Journalism in the UK: A Preliminary Analysis of Form and Content." *Journal of Media Practice* 16 (1): 55–72.
- Lewis, Justin. 2008. "Thinking by Numbers: Cultural Analysis and the use of Data." In *Handbook of Cultural Analysis*, edited by Tony Bennett and John Frow, 654–673. London: Sage.
- Lewis, Justin. 2014. "Terrorism and News Narratives." In *Media and Terrorism: Global Perspectives*, edited by Des Freedman and Daya Thussu, 257–270. London: Sage.
- Lewis, Justin, Stephen Cushion, and James Thomas. 2005. "Immediacy, Convenience or Engagement? An Analysis of 24-Hour News Channels in the UK." *Journalism Studies* 6: 461–477.
- Lewis, Justin, and Tammy Speers. 2003. "Science and Society: Misleading Media Reporting? The MMR Story." *Nature Reviews Immunology* 3: 913–918.
- Lewis, Justin, and R. Thomas. 2015. "More of the Same: News, Economic Growth and the Recycling of Conventional Wisdom." In *Money Talks*, edited by Jostein Gripsrud and Graham Murdock, 81–100. Intellect Books.
- Manning, Paul. 2001. *News and News Sources: A Critical Introduction*. London: Sage.
- Meyer, Philip. 1973. *Precision Journalism*. Bloomington: Indiana University Press.
- Ofcom. 2016. *Public Service Broadcasting Annual Report 2016*. London: Ofcom.
- Rogers, Simon. 2011. *Facts are Sacred: The Power of Data*. London: Guardian Books.
- Schlesinger, Philip, and Howard Tumber. 1994. *Reporting Crime: The Media Politics of Criminal Justice*. Oxford: Clarendon Press.
- Wahl-Jorgensen, Karin, Mike Berry, Iñaki Garcia-Blanco, Lucy Bennett, and Jonathan Cable. 2016. "Rethinking Balance and Impartiality in Journalism? A Case Study how the BBC Attempted and Failed to Change the Paradigm." *Journalism: Theory Practice and Criticism* 1first. doi:10.1177/1464884916648094
- Woodward, Kathleen. 2009. *Statistical Panic: Cultural Politics and Poetics of the Emotions*. Durham: Duke University Press.

Stephen Cushion (author to whom correspondence should be addressed), Cardiff School of Journalism, Media and Cultural Studies, Cardiff University, UK. E-mail: CushionSA@cardiff.ac.uk

Justin Lewis, Cardiff School of Journalism, Media and Cultural Studies, Cardiff University, UK. E-mail: lewisj2@cardiff.ac.uk

Robert Callaghan, Cardiff School of Journalism, Media and Cultural Studies, Cardiff University, UK. E-mail: Callaghanr2@cardiff.ac.uk